

Miniature Power Relay

SM1P

Features

- Small size, 15.7mm high.
- IP/OP 5kV, withstand surge voltage of 10kV.
- Several contact types available.
- Creepage and clearance distance between coil and contacts $\geq 10\text{mm}$.
- IEC60335-1 compliant product is available.
- IEC60079-15 compliant product is available.

Safety certificate

UL、cUL (File No.) : E190598

VDE (File No.) : 40031353

CQC (File No.) : CQC10002049463

Contact Data

Type	SM-1Poles	SM-1Poles (H/T)
Rated load (Resistive load)	16A 250VAC	12A 250VAC
Max. switching current	16A	12A
Max. switching voltage	277VAC	277VAC
Max. switching power	4432VA	3324VA
Min. switching load	6V 1A	6V 1A

Characteristic

Contact material	Silver alloy	
Contact resistance	100mΩ Max. (at 1A 6VDC)	
Operate time (at rated coil voltage)	15ms Max. (No diode)	
Release time	10ms Max. (No diode)	
Insulation resistance	Min. 1,000MΩ (at 500VDC)	
Dielectric strength	Between open contacts : 1,000VAC , 50/60Hz for 1min.	
	Between coil and contact : 5,000VAC , 50/60Hz for 1min.	
Vibration resistance	Destructive	10 ~ 55Hz , at double amplitude of 1.5 mm
	Functional	10 ~ 55Hz , at double amplitude of 1.5 mm
Shock resistance	Destructive	100G Min.
	Functional	10G Min.
Endurance	Mechanical endurance (10,800 ops./h)	10,000,000 (at room temperature)
	Electrical endurance (360 ops./h)	100,000 (at room temperature)
Ambient temperature	-40°C ~ +85°C (No condensation) For ambient temperature is 105°C, please contact Sanyou.	
Weight	Approx.13.5g	



Coil Data (at 20°C)

Nominal voltage (VDC)	Nominal operating current $\pm 10\%$ (mA)	Coil resistance $\pm 10\%$ (Ω)	Max. allowable voltage	Operate voltage (Max.)	Release voltage (Min.)	Nominal operating power
5	80.00	62.5	130% of nominal voltage	75% of nominal voltage	10% of nominal voltage	Approx.0.4W
6	66.67	90				
9	44.44	202.5				
12	33.33	360				
18	22.22	810				
24	16.67	1440				
48	8.33	5760				
60	7.00	8570				
110	3.82	28800				

The data shown above are initial values. Do not apply maximum allowable voltage on coil for more than 10 minutes to avoid overheating of the coil.

Safety Certificate Ratings (Note: More details of approved ratings, please refer to the safety certificates)

Certificates	CQC	VDE	UL/cUL	
File No.	CQC10002049463	40031353	E190598	
Approved ratings	16A 250VAC 12A 250VAC	16A 250VAC 12A 250VAC 10A 250VAC	1Pole 16A 250VAC Resistive & G.P. 20A 277VAC Resistive & G.P. 1HP, 480/240 VAC 1/2 HP, 120 VAC 10 FLA /60 LRA, 240 VAC Pilot Duty A300 360VA 120VAC	1Pole(H/T) 12A 250VAC Resistive & G.P. 10A 277VAC Resistive & G.P. 3/4HP, 3.5FLA, 480VAC 1/2HP, 4.9FLA, 240VAC 1/3 HP, 120 VAC 10 FLA /48 LRA, 240 VAC Pilot Duty A300 360VA 120VAC

(1) All values unspecified are at room temperature.

(2) Only typical ratings are listed above and the endurance differ in each load. Other specific load information are available upon request.

(3) For sealed type testing, please open the ventilation hole in the case before test.



Ordering Information

Nomenclature

SM -S -1 12 D M H 1 -F -XX

Special Parameter :

Nil-Standard type ,

Letters or Numbers-Special requirements

Insulation System: Nil-Standard B-Class B F-Class F

Contact Material :

Nil-AgNi 1-AgSnO₂ 2-AgNi & AgSnO₂

3-3 Compounds AgNi (Form C)

4-3 Compounds AgSnO₂ (Form C)

Load capacity :

Nil-16A , 5mm pin

H-12A , 5mm pin

T-12A , 3.5mm pin

Contact Arrangement : Nil-Form C M-Form A

Coil Power : D-0.4W

Rated Coil Voltage (VDC) :

05 , 06 , 09 , 12 , 18 , 24 , 48 , 60 , 110

Number of Poles : 1-1 Pole

Protective Construction :

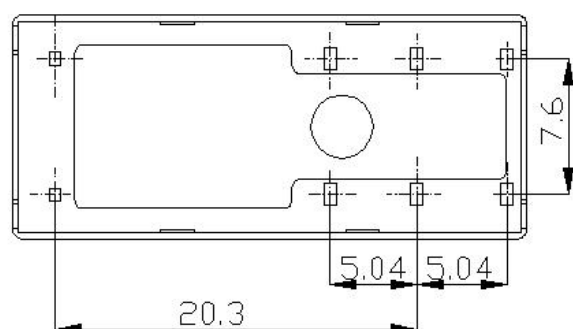
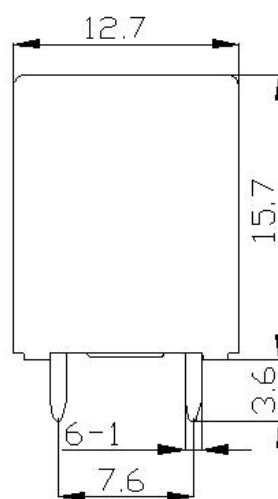
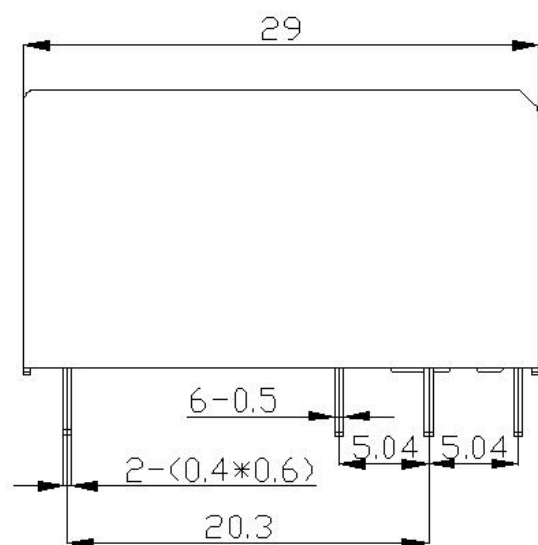
S-Flux-proofed SH-Sealed type washable

Type : SM

- (1) Plastic sealing type can not be used in polluted environment (containing H₂S, SO₂, NO₂, dust and other pollutants).
- (2) After the plastic seal product is loaded into PCB welding, the whole cleaning or surface treatment can not be carried out.
- (3) Special requirements of customers (XX) shall be evaluated by our company and marked by characteristic symbols.
- (4) No 3 compounds contact specifications for SM-H and SM-T.



Outline dimension, wiring diagram, PCB layout (Unit: mm)



In case of no tolerance shown on outline dimension

If dimension < 1 mm, tolerance: $\pm 0.2\text{mm}$

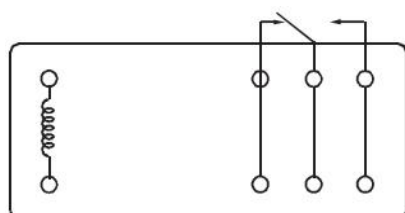
If dimension 1~5mm, tolerance: $\pm 0.3\text{mm}$

If dimension > 5mm, tolerance: $\pm 0.4\text{mm}$

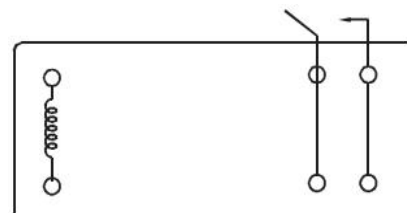
Note:

1. The dimension of pin is the size before tinning
2. Tolerance of PCB layout: $\pm 0.1\text{ mm}$

1P 16A
5mm Pin

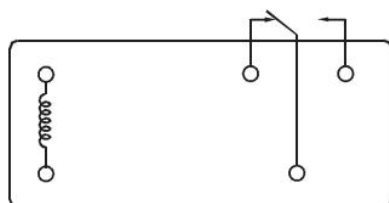


1 c

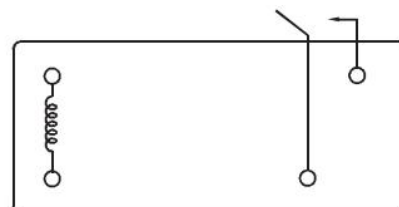


1 a

1P 12A
5mm Pin



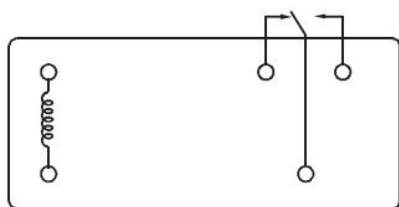
1 c



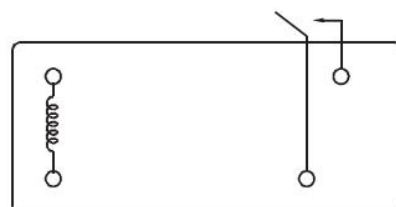
1 a



1P 12A
3.5mm Pin



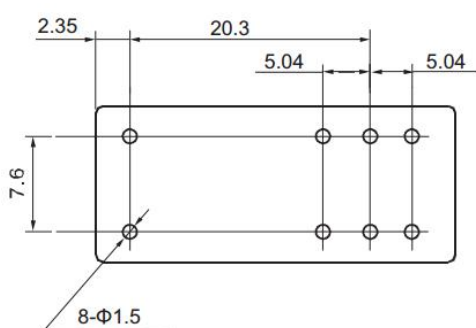
1 c



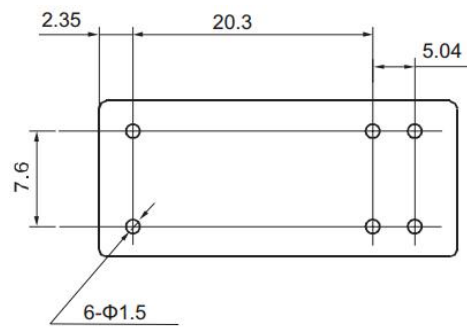
1 a

Wiring Diagram (bottom view)

1P 16A
5mm 脚位 Pin

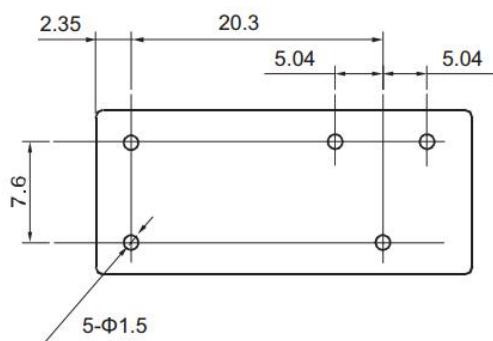


1 c

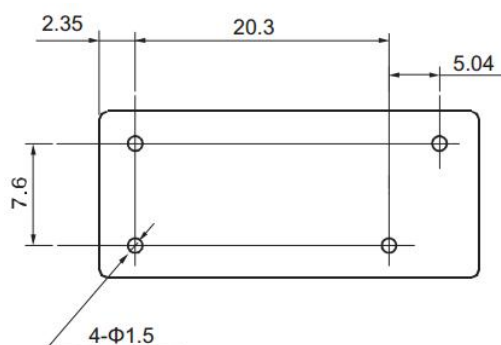


1 a

1P 12A
5mm Pin

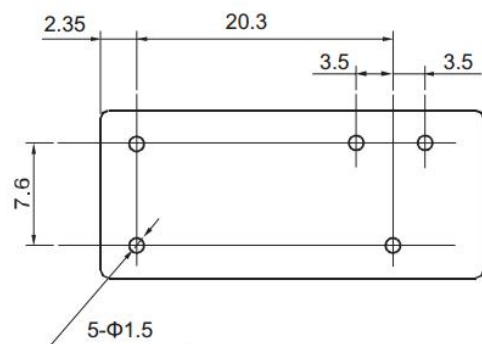


1 c

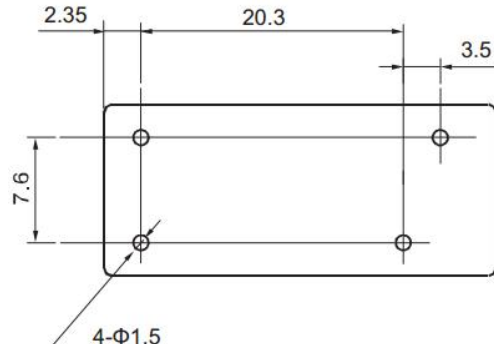


1 a

1P 12A
3.5mm Pin



1 c



1 a

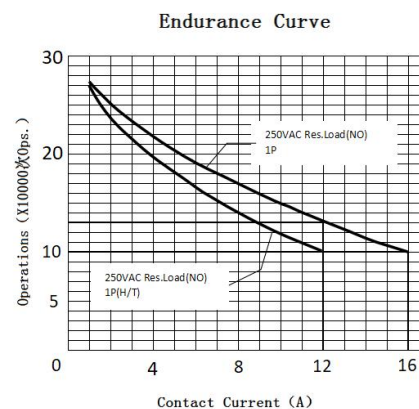
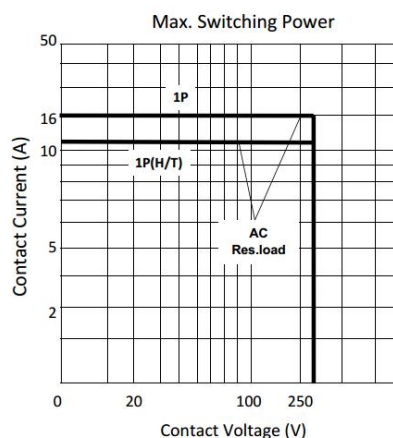
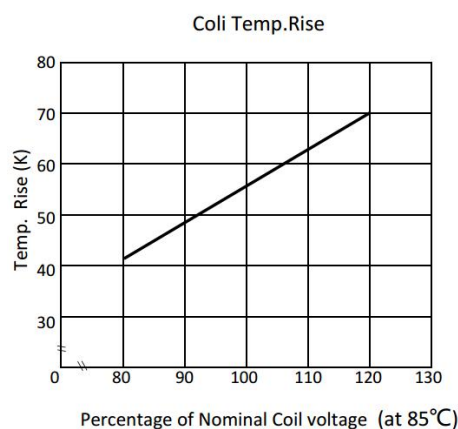
P.C.B. Layout (bottom view)



Typical Applications

- Home appliances, washing machine, air-conditioning, microwave oven, sound, monitor, industrial control instrument, etc.

Characteristic Curves



Note :

- (1) Test conditions: room temperature, flux-proof product, resistive load, 1s on, 9s off.
- (2) The above curves are for reference only, and the final result is subject to the experiment.

Disclaimer:

The specification is for reference only. Specifications are subject to change without prior notice.

We could not evaluate all the performance and all the parameters for every possible applications. Thus the users should in a right position to choose suitable product for their own application. For sealed relays, after installation and cleaning, please open the ventilation hole in the case before use. If there is any query, please contact Sanyou for technical services. However it is the user's responsibility to determine which product should be used.

